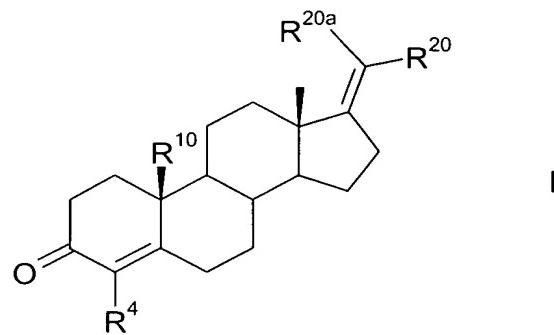


This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Currently Amended): A 17-Methylene steroid of formula I



in which

R<sup>4</sup> is a halogen atom or a pseudohalogen,

R<sup>10</sup> is a hydrogen atom or a straight-chain or branched C<sub>1</sub>-C<sub>4</sub> alkyl group,

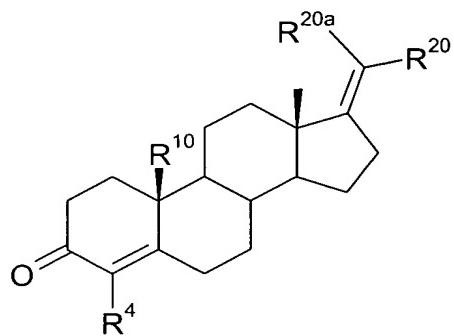
R<sup>20</sup> and R<sup>20a</sup> are, independently of one another, a hydrogen atom, a straight-chain or branched C<sub>1</sub>-C<sub>4</sub> alkyl or hydroxy-C<sub>1</sub>-C<sub>4</sub> alkyl group, or

one of radicals R<sup>20</sup> and R<sup>20a</sup> is a hydrogen atom, a straight-chain or branched C<sub>1</sub>-C<sub>4</sub> alkyl or hydroxy-C<sub>1</sub>-C<sub>4</sub> alkyl group, and the other radical is a halogen atom or a pseudohalogen;

wherein, when R<sup>10</sup> is methyl and R<sup>20</sup> and R<sup>20a</sup> are both hydrogen, R<sup>4</sup> is not chlorine.

Claim 2 (Previously Presented): A 17-Methylene steroids according to claim 1, wherein R<sup>4</sup> is a chlorine or bromine atom or a cyano group.

Claim 3 (Previously Presented): A 17-Methylene steroid of formula I



in which

$R^4$  is a halogen atom or a pseudohalogen,

$R^{10}$  is a hydrogen atom or a straight-chain or branched  $C_1$ - $C_4$  alkyl group,

one of radicals  $R^{20}$  and  $R^{20a}$  is a hydrogen atom or a methyl group, and the other radical is a fluorine, chlorine or bromine atom, an azido, cyano or rhodano group or hydroxymethyl.

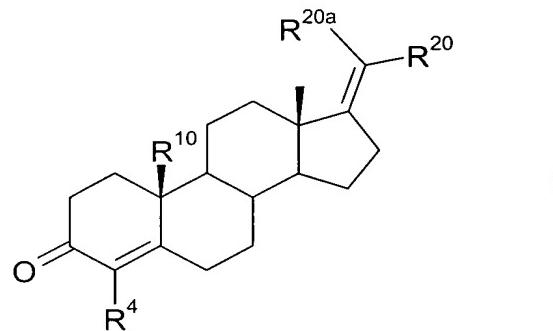
Claim 4 (Previously Presented): A17-Methylene steroids according to claim 1, wherein  $R^{10}$  is a hydrogen atom or a methyl group.

Claim 5 (Previously Presented): A17-Methylene steroid selected from the group consisting of

- 1) E-17-Chloromethylene-4-chloro-estr-4-en-3-one,
- 2) E-17-Cyanomethylene-4-chloro-estr-4-en-3-one,
- 3) Z-17-Cyanomethylene-4-chloro-estr-4-en-3-one,
- 4) Z-17-(1')-Cyanoethylidene-4-chloro-estr-4-en-3-one,
- 5) Z-17-Ethylidene-4-chloro-estr-4-en-3-one,
- 6) E-17-Ethylidene-4-chloro-estr-4-en-3-one,
- 7) E-17-Bromomethylene-4-chloro-estr-4-en-3-one,

- 8) Z-17-Chloroethylidene-4-chloro-estr-4-en-3-one,
- 9) Z-17-Bromoethylidene-4-chloro-estr-4-en-3-one,
- 10) E-17-Chloromethylene-4-cyano-androst-4-en-3-one,
- 11) E-17-Chloromethylene-4-chloro-androst-4-en-3-one,
- 12) E-17-(2')-Hydroxyethylidene-4-chloro-estr-4-en-3-one, and
- 13) Z-17-(2')-Hydroxyethylidene-4-chloro-estr-4-en-3-one.

Claim 6 (Previously Presented): A process for preparing a 17-methylene steroid of formula I



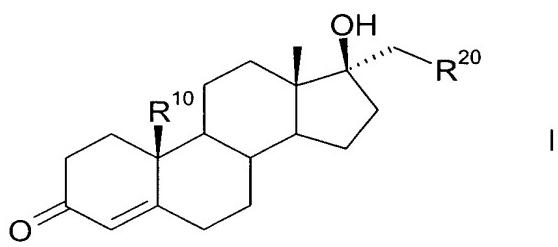
in which

$R^4$  is a halogen atom or a pseudohalogen,

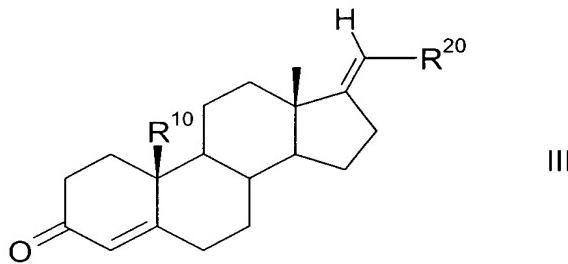
$R^{10}$  is a hydrogen atom or a straight-chain or branched  $C_1$ - $C_4$  alkyl group,

$R^{20}$  is a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, or a halogen atom or a pseudohalogen, and

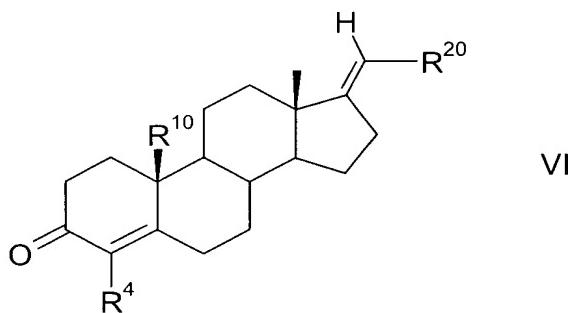
$R^{20a}$  is a hydrogen atom, comprising reacting a compound of formula II,



in an aprotic solvent with an acid chloride to form a 17-methylene steroid of formula III,



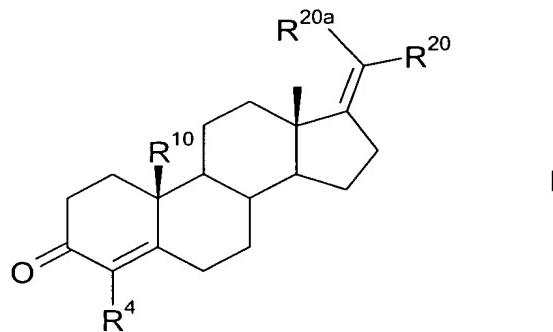
the 4,5-epoxide is generated with  $\text{H}_2\text{O}_2/\text{NaOH}$ , the 4,5-epoxide is then opened with a nucleophilic reagent, which is derived from a halogen atom or pseudohalogen, in a dipolar aprotic solvent to a halogen- or pseudohalogen hydrin, and optionally reacted with mineral acid, carboxylic acid or sulfonic acid in a protic or aprotic solvent with dehydration to a compound of formula IV,



wherein  $\text{R}^4$  is a halogen atom or pseudohalogen,  $\text{R}^{10}$  is a hydrogen atom or a straight-chain or branched  $\text{C}_{1-4}$  alkyl group,

and  $\text{R}^{20}$  is a  $\text{C}_{1-4}$  alkyl or hydroxy- $\text{C}_{1-4}$  alkyl group, a halogen atom or a pseudohalogen.

Claim 7 (Previously Presented): A process for preparing a 17-methylene steroid of formula I



in which

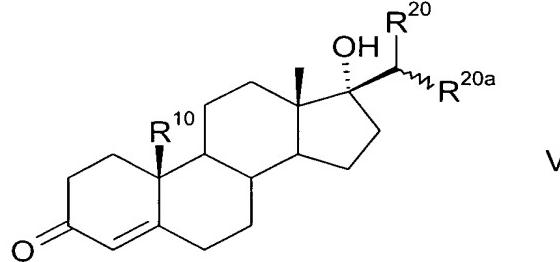
$R^4$  is a halogen atom or a pseudohalogen,

$R^{10}$  is a hydrogen atom or a straight-chain or branched  $C_1$ - $C_4$  alkyl group,

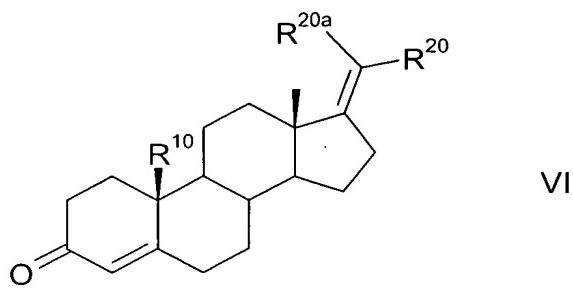
$R^{20}$  and  $R^{20a}$  are, independently of one another, a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, or

one of radicals  $R^{20}$  and  $R^{20a}$  is a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, and the other radical is a halogen atom or a pseudohalogen,

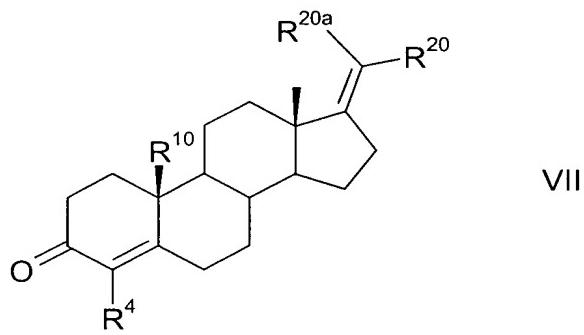
comprising reacting a compound of formula V,



with an acid chloride in an aprotic solvent to form a methylene steroid of formula VI,



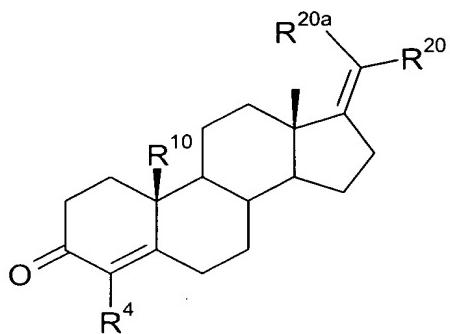
the 4,5-epoxide is generated with  $\text{H}_2\text{O}_2/\text{NaOH}$ , the 4,5-epoxide is then opened with a nucleophilic reagent, which is derived from a halogen atom or pseudohalogen, in a dipolar aprotic solvent to a halogen- or pseudohalogen hydrin, and optionally reacted with mineral acid, carboxylic acid or sulfonic acid in a protic or aprotic solvent with dehydration to a compound of formula VII,



in which  $\text{R}^4$  is a halogen atom or pseudohalogen,  $\text{R}^{10}$  is a hydrogen atom or a straight-chain or branched  $\text{C}_{1-4}$  alkyl group,

and  $\text{R}^{20}$  is a  $\text{C}_{1-4}$  alkyl or hydroxy- $\text{C}_{1-4}$  alkyl group, and  $\text{R}^{20a}$  is a hydrogen atom, a halogen atom or a pseudohalogen.

**Claim 8 (Currently Amended):** A ~~pharmaceutical composition comprising at least one~~ 17-methylene steroid of formula I



in which

$R^4$  is a halogen atom or a pseudohalogen,

$R^{10}$  is a hydrogen atom or an ethyl, propyl, isopropyl, butyl, isobutyl, or tert-butyl group a straight-chain or branched  $C_1-C_4$  alkyl group,

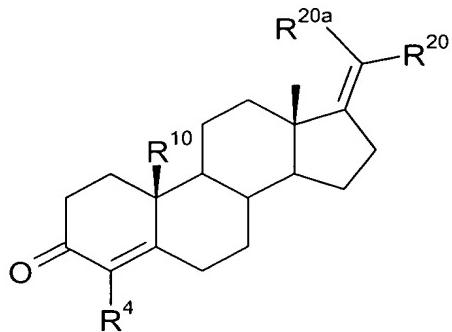
$R^{20}$  and  $R^{20a}$  are, independently of one another, a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, or

one of radicals  $R^{20}$  and  $R^{20a}$  is a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, and the other radical is a halogen atom or a pseudohalogen,

and a pharmaceutically compatible adjuvant or vehicle.

Claim 9 (Cancelled).

Claim 10 (Currently Amended): A 17-Methylene steroid method of treating a prostate diseases, alopecia of the male type, acne or hirsutism, comprising administering to a patient in need thereof an effective amount of a compound of formula I



in which

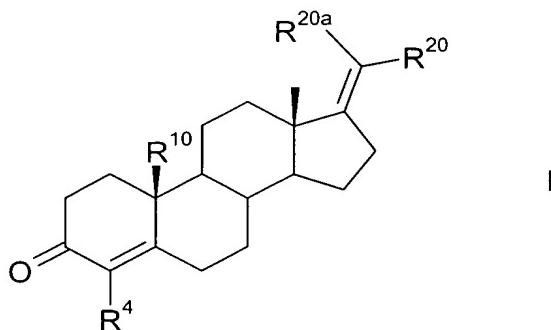
$R^4$  is a halogen atom fluorine, bromine, or iodine atom or a pseudohalogen,

$R^{10}$  is a hydrogen atom or a straight-chain or branched  $C_1$ - $C_4$  alkyl group,

$R^{20}$  and  $R^{20a}$  are, independently of one another, a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, or

one of radicals  $R^{20}$  and  $R^{20a}$  is a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, and the other radical is a halogen atom or a pseudohalogen.

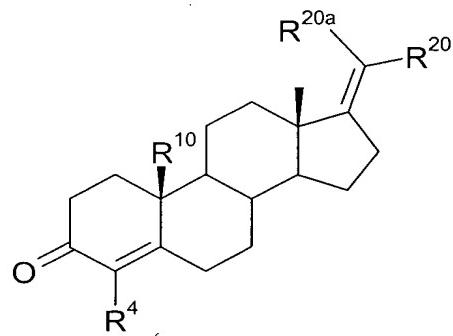
Claim 11 (Currently Amended): A 17-Methylene steroid method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound of formula I



in which

$R^4$  is a halogen atom or a pseudohalogen,  
 $R^{10}$  is a hydrogen atom or a straight-chain or branched C<sub>1</sub>-C<sub>4</sub> alkyl group,  
 $R^{20}$  and  $R^{20a}$  are, independently of one another, is a hydrogen atom, a straight-chain or branched C<sub>1-4</sub> alkyl or hydroxy-C<sub>1-4</sub> alkyl group,  
 $R^{20a}$  is a straight-chain or branched C<sub>1-4</sub> alkyl or hydroxy-C<sub>1-4</sub> alkyl group, or  
one of radicals  $R^{20}$  and  $R^{20a}$  is a hydrogen atom, a straight-chain or branched C<sub>1-4</sub> alkyl or hydroxy-C<sub>1-4</sub> alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 12 (Currently Amended): A 17-Methylene steroid method inhibiting 5 $\alpha$ -reductase comprising administering to a patient in need thereof an effective amount of a compound of formula I

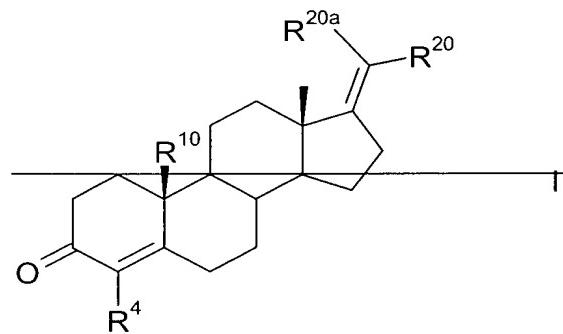


in which

$R^4$  is a ~~halogen atom or~~ a pseudohalogen,  
 $R^{10}$  is a hydrogen atom or a straight-chain or branched C<sub>1</sub>-C<sub>4</sub> alkyl group,  
 $R^{20}$  and  $R^{20a}$  are, independently of one another, a hydrogen atom, a straight-chain or branched C<sub>1-4</sub> alkyl or hydroxy-C<sub>1-4</sub> alkyl group, or

one of radicals R<sup>20</sup> and R<sup>20a</sup> is a hydrogen atom, a straight-chain or branched C<sub>1-4</sub> alkyl or hydroxy-C<sub>1-4</sub> alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 13 (Currently Amended): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 8 and a pharmaceutically compatible adjuvant or vehicle  
17-Methylene steroid of formula I



in which

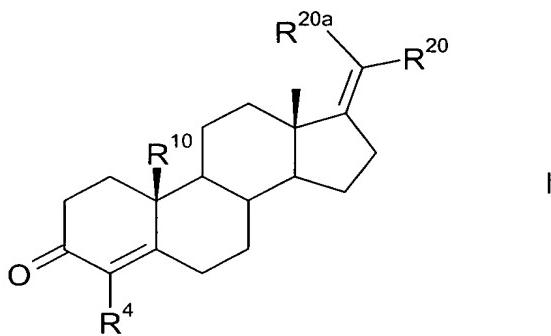
R<sup>4</sup>— is a halogen atom;

R<sup>10</sup>— is a hydrogen atom or a straight chain or branched C<sub>1-4</sub> alkyl group;

R<sup>20</sup> and R<sup>20a</sup> are, independently of one another, a hydrogen atom, a straight chain or branched C<sub>1-4</sub> alkyl or hydroxy C<sub>1-4</sub> alkyl group, or

one of radicals R<sup>20</sup> and R<sup>20a</sup> is a hydrogen atom, a straight chain or branched C<sub>1-4</sub> alkyl or hydroxy C<sub>1-4</sub> alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 14 (Previously Presented): A 17-Methylene steroid of formula I



in which

R<sup>4</sup> is an azido, rhodano or cyano group,

R<sup>10</sup> is a hydrogen atom or a straight-chain or branched C<sub>1</sub>-C<sub>4</sub> alkyl group,

R<sup>20</sup> and R<sup>20a</sup> are, independently of one another, a hydrogen atom, a straight-chain or branched C<sub>1-4</sub> alkyl or hydroxy-C<sub>1-4</sub> alkyl group, or

one of radicals R<sup>20</sup> and R<sup>20a</sup> is a hydrogen atom, a straight-chain or branched C<sub>1-4</sub> alkyl or hydroxy-C<sub>1-4</sub> alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 15 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 1 and a pharmaceutically compatible adjuvant or vehicle.

Claim 16 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 10 and a pharmaceutically compatible adjuvant or vehicle  
method of treating a prostate diseases, alopecia of the male type, acne or hirsutism, comprising  
administering to a patient in need thereof an effective amount of a compound according to claim 1.

Claim 17 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 11 and a pharmaceutically compatible adjuvant or vehicle method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.

Claim 18 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 12 and a pharmaceutically compatible adjuvant or vehicle method inhibiting 5 $\alpha$ -reductase comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.

Claim 19 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 5 and a pharmaceutically compatible adjuvant or vehicle.

Claim 20 (Currently Amended): A method of treating a prostate disease diseases, alopecia of the male type, acne or hirsutism, comprising administering to a patient in need thereof an effective amount of a compound according to claim 5 or a pharmaceutical composition comprising said effective amount of said compound and a pharmaceutically compatible adjuvant or vehicle.

Claim 21 (Currently Amended): A method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound according to claim 5 or a pharmaceutical composition comprising said effective amount of said compound and a pharmaceutically compatible adjuvant or vehicle.

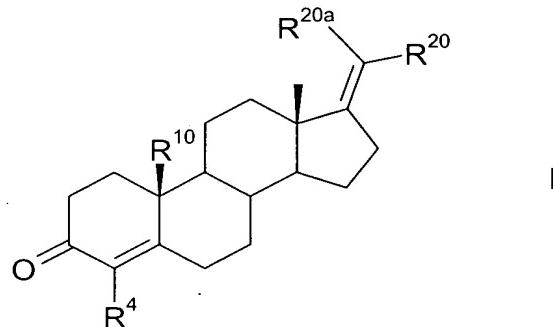
Claim 22 (Previously Presented): A method inhibiting  $5\alpha$ -reductase comprising administering to a patient in need thereof an effective amount of a compound according to claim 5.

Claim 23 (Previously Presented): A 17-Methylene steroid according to claim 1, wherein  $R^4$  is a halogen atom.

Claim 24 (Previously Presented): A 17-Methylene steroid according to claim 1, wherein  $R^4$  is an azido, rhodano or cyano group.

Claim 25 (Previously Presented): A 17-Methylene steroid according to claim 1, wherein  $R^4$  is a cyano group.

Claim 26 (Previously Presented): A 17-Methylene steroid of formula I



in which

$R^4$  is a halogen atom or a pseudohalogen,

$R^{10}$  is a hydrogen atom or a straight-chain or branched  $C_1$ - $C_4$  alkyl group,

one of  $R^{20}$  or  $R^{20a}$  is a hydrogen atom, a straight-chain or branched  $C_{1-4}$  alkyl or hydroxy- $C_{1-4}$  alkyl group, and the other of

$R^{20}$  or  $R^{20a}$  is a straight-chain or branched  $C_{1-4}$  alkyl, a hydroxy- $C_{1-4}$  alkyl group, a halogen atom or a pseudohalogen.